Effect of seedling size and flowering time on fruit quality, secondary metabolite production and bioactivity of pineapple [Ananas comosus (L.) Merr. var. 'Yankee'] fruits

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Abstract

Recently, antioxidants derived from natural sources have gained wide interest worldwide due to their high medicinal values and industrial applications. Various factors have been reported to affect the antioxidant content in plants. This study aimed to analyze the effect of seedling size and flowering time on quality attributes and bioactivity of pineapple fruits, Ananas comosus L. var. Yankee. Free radical scavenging activities of the fruits produced from seedlings of different sizes (grades A, B and C), produced either through natural flowering or artificially induced flowering were investigated using DPPH, ABTS and FRAP assays. The methanolic extract of fruits from grade A seedlings showed the lowest IC50 value of ABTS radical and the highest FRAP value, indicating good scavenging activity. However, DPPH assays showed that fruits from grade C seedlings (either naturally produced or artificially induced) exhibited the highest scavenging activity against DPPH, compared to fruits from other seedling grades. Moreover, fruits from grade B seedlings produced from natural flowering showed significantly better antioxidant potential than fruits that were artificially induced. Other quality attributes such as fruit weight and length, total titratable acidity (TTA), amount of total soluble solid (TSS) and pH were also observed to be not significantly different among fruits produced from different seedling sizes, and their phytochemical constituents were also similar. These results suggested that A. comosus L. var. Yankee fruits contain various pharmacologically important phytoconstituents which can be further exploited for various uses.

Keywords

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